

**CLAIMS**

What is claimed is:

1. A semi-rigid mold member, comprising:  
a first ply;  
a second ply adjacent said first ply; and  
a sieve member adjacent said first ply and said second ply.
2. The semi-rigid mold member as recited in claim 1, wherein said sieve member is embedded in said first ply.
3. The semi-rigid mold member as recited in claim 1, wherein said first ply and said second ply include a fluoroelastomer material.
4. The semi-rigid mold member as recited in claim 1, wherein said sieve member includes a stainless steel screen.
5. The semi-rigid mold member as recited in claim 4, wherein said screen provides approximately 60 micron retention.
6. The semi-rigid mold member as recited in claim 1, further comprising an FEP layer adjacent said first ply and opposite said second ply.
7. The semi-rigid mold member as recited in claim 6, further comprising a third ply adjacent said second ply, and a fourth ply adjacent said third ply.

8. The semi-rigid mold member as recited in claim 7, further comprising a rigid reinforcement insert between said third ply and said fourth ply.

9. The semi-rigid mold member as recited in claim 8, wherein said reinforcement insert includes a metallic sheet.

10. The semi-rigid mold member as recited in claim 7, wherein said third ply and said fourth ply include a fiber reinforced fluoroelastomer material.

SECRET

11. A composite molding apparatus, comprising:  
a rigid mold member; and  
a semi-rigid mold member matable with said rigid mold member, said semi-rigid mold member including a sieve member sandwiched therein.
12. The composite molding apparatus as recited in claim 11, wherein said semi-rigid mold member comprises a first ply and said second ply, said sieve member adjacent said first ply and said second ply.
13. The composite molding apparatus as recited in claim 12, wherein said first ply and said second ply include a fluoroelastomer material.
14. The composite molding apparatus as recited in claim 12, further comprising a third ply adjacent said second ply, and a fourth ply adjacent said third ply.
15. The composite molding apparatus as recited in claim 14, further comprising a rigid reinforcement insert between said third ply and said fourth ply.
16. The composite molding apparatus as recited in claim 15, wherein said rigid reinforcement insert includes a metallic plate.
17. The composite molding apparatus as recited in claim 14, wherein said third ply and said fourth ply include a fiber reinforced fluoroelastomer material.

18. A method of manufacturing a core composite article, comprising the steps of:

(1) mating a semi-rigid mold member to a rigid mold member to form a cavity containing a core having a plurality of protruding pins, the core located between a first composite prepreg and a second composite prepreg; and

(2) evacuating the cavity of said step (1) such that the pins perforate the composite prepreg plies while limiting pin penetration of the semi-rigid mold member to a predetermined depth.

19. A method as recited in claim 18, wherein said step (2) further comprises applying a pressure greater than 45 psi within the cavity.

20. A method as recited in claim 18, wherein said step (2) further comprises controlling said predetermined depth by locating a sieve member within the semi-rigid mold member at said predetermined depth.

21. A method as recited in claim 18, wherein said step (2) further comprises:  
trapping the pins between a sieve member within the semi-rigid mold member and the rigid mold member; and  
supporting the semi-rigid mold member relative to the rigid mold member upon the pins to minimize crushing of the core.